

**DETAILED ACTION**

**EXAMINER'S AMENDMENT**

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee. Authorization for the amendment was given by in a telephone interview with Lawrence E Ashrey on 04/27/11.

***In the Claims***

2. Claim 6 is canceled.
3. Claim 7 is canceled.
4. In Claim 11, line 33, "by including "has been replaced by "the reverse leading groove including ".

The above change is made to put the claim in allowable condition.

***Allowable Subject Matter***

5. The following is an examiner's statement of reasons for allowance per MPEP 1302
6. Claims 1,2,5,8-12 are deemed to be directed to a non-obvious Improvement over Nobuo et al. (Japanese patent S-62-44108), Goodnight (6457561), and Stocklein (2996240).
7. Independent claims 1 and 11 are drawn to a lubricating structure for an electric compressor. The compressor comprises a shaft having two sections with the first section having a first diameter that is greater than the second sub shaft

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section. A vertical bore is drilled inside the sub shaft .An annular lubricant groove is formed between the inside diameter of a bearing that supports the shaft and a circumferential notch that is formed on the outer surface of the shaft.The shaft on its external surface also includes a forward leading groove and a reverse leading groove.The reverse leading groove has at least one of a crossectional area smaller than that of the forward leading groove or a lead greater than that of the orward leading groove. The forward leading groove opens at the lower axial surface of the circumferential notch and also opens to the inner rim of the annular lubricant groove, while the second end of the forward leading groove communicates with a centrifugal pump formed inside the shaft that pumps oil from an oil pool formed in the hermetic container. The reverse leading groove has a lead directing in an opposite direction to that of the forward leading groove and also extends and opens to the lower axial surface of the circumferential notch. The reverse leading groove's first end also communicates with the centrifugal pump via the second section of the shaft and its second end opens to the inner rim of the annular lubricant groove. The vertical hole inside the sub shaft has a first end that communicates with the outer rim of the annular lubricant groove and its second end opens to the hermetic container. Thus the forward leading groove, the annular lubricant groove and the vertical hole define a lubricant pathway so that the lubricant passes from the forward leading groove to the annular lubricant groove and then passes to the vertical hole. The reverse leading groove has a crossectional area smaller than that of the forward leading groove or a lead greater than that of the forward leading groove.

Nobuo et al. disclose most of the features of the claimed invention but fail to disclose a reverse leading groove and essentially its associated details such as the groove originating at a smaller diameter portion of the shaft and the reverse groove having a crosssectional area smaller than that of the forward leading groove. Nobuo et al. also fail to teach an annular lubricant groove structure and its specific details.

Goodnight teaches a reverse groove structure in a similar compressor structure but does not specify that it originates from a smaller diameter portion of the shaft and also fails to teach that the crosssectional area of the reverse leading groove is smaller than that of the forward leading groove or that the lead of the reverse groove is greater than that of the forward leading groove.

Stocklein et al teach an annular lubricant groove structure in compressor application but fail to teach a reverse groove that is in communication with the annular lubricant groove structure. In addition the annular lubricant groove structure is different from the claimed invention since Stocklein et al 's forward leading groove communicates with the lower axial surface of the circumferential notch via the groove "a" which is engraved inside the bearing surface while Applicant's invention is directed to a groove formed on the shaft itself.

Thus In the examiner's opinion, it would not have been obvious to a person of ordinary skill in the art to modify the pump of Nobuo et al. by Goodnight and Stocklein et al and arrive at the instant invention since the prior art of records alone or combined fail to disclose or fairly teach some of the claimed apparatus features as stated above.

### ***Conclusion***

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amene S. Bayou whose telephone number is 571-270-3214. The examiner can normally be reached on Monday-Thursday, 7:30-4:00.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on (571)272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service

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Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Devon C Kramer/  
Supervisory Patent Examiner, Art  
Unit 3746

/Amene S Bayou/

Examiner, Art Unit 3746